Published in final edited form as:
Justice Q. 2013 February 1; 30(1): . doi:10.1080/07418825.2011.592507.

Are Risky Youth Less Protectable As They Age? The Dynamics of Protection During Adolescence and Young Adulthood

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Abstract

Research on recidivism in criminal justice and desistance in criminology are not integrated. Yet, both fields seem to be moving towards models that look at how positive elements in a person's environment can impact a person's behavior, conditional on different levels of risk. This study builds on this observation by applying interactional theory and the concept of Risk-Needs-Responsivity to theorize that both Needs and Responsivity will change over time in predictable ways. We then use a novel empirical approach with the Rochester Youth Development Study to show that even in late adolescence, individuals who are at risk for violence can be protected from future violence and risky behavior like gun carrying with positive events in their environment and personal life. In young adulthood, fewer people are still at risk for violence, and those who are at risk are harder to protect from future violence and gun carrying.

Keywords

Youth Violence; Risk and Protective Factors; Developmental Stages; Trajectory Analysis

Introduction

It is not surprising that criminological researchers from different paradigms or with different goals (theory development vs. application) often end up with different conclusions. A notable example of this type of disagreement is the different conclusions about the causes of change in offending by scholars who study recidivism among convicted offenders and those who study desistance from crime using data from the general population. Recidivism scholars are convinced that cognitive behavioral changes are needed to achieve change in offending while desistance scholars believe that change in offending is driven by socio-structural factors like marriage and employment.[1]

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Points of view or opinions in this document are those of the authors and do not necessarily represent the official position or policies of the funding agencies.

[1]A detailed description of the literatures supporting this disconnect was provided in the recent National Research Council report on Parole, Desistance from Crime, and Community Integration (2007). We are not suggesting that desistance scholars do not mention cognitive transformations or that recidivism scholars never consider socio-structural factors. Rather, we are identifying the major thrusts of the two camps as discussed in the NRC report.

We believe the debate between recidivism and desistance scholars is based on differences in focus and time frame. Recidivism scholars investigate the short-term (one to three years) impact of factors or programs while desistance scholars examine patterns over a time period that often spans decades. But this gap between recidivism and desistance scholars is closing as both groups of researchers have shown a particular interest in identifying dynamic features that can cause change among those most at risk, or most entrenched in crime (e.g. Andrews, Bonta, & Wormith, 2006; Wright, Caspi, Moffit, & Silva, 2001). This paper further closes the gap between recidivism scholarship and desistance research by highlighting specific insights from a leading lifecourse theory of crime, interactional theory (Thornberry, 1987; Thornberry & Krohn, 2001; 2005), that can be interpreted within the risk and protective factor paradigm.

Interactional theory predicts that an individual's "trajectory" of criminal activity effectively encapsulates or expresses the risk factors that interact to create criminal activity. As a result, risk can be summarized by a developmentally faithful description of past criminal activity. Interactional theory also predicts that change is more difficult as individuals age and become more "fixed" or "embedded" (Hagan, 1993) in crime. Finally, interactional theory predicts that different dynamic factors will be more or less protective at different ages.

These ideas will be tested with data from the Rochester Youth Development Study using an analytical technique that both reflects interactional theory's emphasis on the importance of considering the trajectory of offenders over the life course and the developments in recidivism research that have focus on the need to take into account offending history in assessing both risk and needs. Our focus is on violent offending and the carrying (and use) of weapons because of the serious consequences of such behaviors. We begin our exploration of these ideas by briefly describing interactional theory and then outlining our methodological strategy.

Interactional Theory

In recent years, scholars have increasingly called for a theoretically based examination of risk and protective factors (Hawkins, Catalano, & Miller, 1992; Luthar, Cicchetti, & Becker, 2000). Luthar et al. (2000, p.552) are unequivocal in their call for such an approach, stating that "Progress in the area of resilience will remain seriously constrained as long as studies remain largely empirically driven, as opposed to theoretically-based, with little conceptual recognition of the importance of multiple contexts in children's development."

There are a number of life course theories that are particularly salient to concerns raised in the risk and protective factor research and to issues germane to developmental stages throughout the life course (see Farrington, 2006). We have chosen to use interactional theory to inform our analysis because it clearly identifies the different domains, recognizes the cumulative effects and indirect causal changes among domains, and provides a developmental perspective that identifies and explains why some protective factors may be more influential than others at certain developmental stages. Additionally, the design of the study which generated the data used was informed by interactional theory.

Interactional theory has always recognized that factors may be differentially related to outcomes depending on the developmental stage of the youth. In its original formulation, Thornberry (1987) posited three causal models to account for delinquency in early, middle, and late adolescence. Subsequent expansions of the theory were intended to explain antisocial conduct in the pre-teenage years[2] (Thornberry & Krohn, 2001; 2005; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003) and criminal behavior in the young adult years (Thornberry & Krohn, 2001; 2005). Thus, the theory addresses the period of time from early

childhood to young adulthood and explicitly recognizes that important variables and causal processes may differ across the life course.

Interactional theory emphasizes the importance of considering causal factors from different domains including the individual, family, and environment (e.g., school, peers, community). The theory includes social structural factors (e.g., structural adversity, collective efficacy), peer factors (e.g., prosocial peers), school factors (e.g., performance, commitment), family factors (e.g., conflict, parent-child relationships), and individual factors (e.g., temperament, academic aptitude, self-esteem) (Thornberry 1987). The range of causal factors included provides a rich collection of risk and protective factors from different domains, and these factors can be treated either independently or combined into cumulative measures.

The developmental framework of the model facilitates an examination of how protective factors serve to insulate those at high risk from participation in delinquency. Additionally, the theory's emphasis on examining crime throughout the life course focuses attention on the criminal career, suggesting that we identify protective factors that distinguish between those who exit from risky trajectories and those who continue to exhibit delinquent behavior. Risk is viewed as a dynamic process that potentially cumulates over time, as opposed to a static, one-point-in-time phenomenon.

Although interactional theory has been used to explain the development of antisocial behavior and crime from childhood through adulthood (Thornberry, 1987; Thornberry and Krohn, 2001; 2005), in this study, we are specifically interested in identifying whether different protective factors are active in middle adolescence and early adulthood when participation in delinquent behavior should be at its peak.

We take advantage of the fact that the behavior of interest has already manifested itself by using information on prior participation as our measure of risk. Moreover, we focus specifically on violence, rather than overall delinquency. More precisely, we estimate the trajectories of participation in violent behavior and use the posterior probability of assignment to trajectory groups as a measure of risk (see below). This approach allows for a more efficient identification of protective factors (Krohn, Lizotte, Bushway, Schmidt, & Phillips, forthcoming).

Research also has confirmed a long recognized phenomenon; not all youth who are at high risk for aggressive and violent behavior will engage in such behavior. Similarly, not all youth who engage in such behaviors in their adolescent years continue to do so as young adults. Interactional theory informs our identification of potential protective factors that can insulate youth from those risk factors identified above or deflect youth from a criminal trajectory. We now turn to a discussion of the protective factors that are suggested within interactional theory. These factors are discussed in the order that reflects the developmental stage at which interactional theory suggests they should be most influential.

A number of protective factors may delay or prevent the onset of aggressive and violent behaviors among high-risk youth. Parents play a critical role in protecting high-risk youth from violent behaviors. A good relationship with at least one parent has been shown to increase childhood resilience (Franke, 2000; Fraser, Kirby, & Smokowski, 2004; Gorman-Smith, Henry, & Tolan, 2004; Stouthamer-Loeber, Wei, Loeber, & Masten, 2004; Sullivan, 2006). Gorman-Smith et al. (2004) provide a particularly interesting examination of the role of family functioning. They examine the impact of exceptionally functioning families (a

[2]Interactional theory recognizes that the family and more specifically parenting behaviors play an essential role in the pre-teenage years. Individual deficits such as temperament or learning disabilities can lead to antisocial conduct if ineffectively dealt with by parents. Such behavior will result in situations that jeopardize performance in school and interaction with conventional peers.

composite of positive parenting practices, structure over time, and emotionally enriching family environments) on violence exposure and on violent behavior during mid-adolescence. They find that exceptionally functioning families do not insulate youth from exposure to violence but do insulate them from perpetrating violence once exposed.

Parental supervision and monitoring of their children is predicted to be particularly important in preventing violent behavior in the face of risk. Wright and Fitzpatrick (2006) found that, for both young children and adolescents, parental monitoring decreased the probability of participating in physical fights. Among adolescents, a number of studies have found parental monitoring and supervision to be important protective factors (Gest, Neeman, Hubbard, Masten, & Tellegen, 1993; O'Donnell, Schwab-Stone, & Muyeed, 2002; Pettit, Bates, Dodge, & Meece, 1999; Stouthamer-Loeber et al. 2002; Sullivan, 2006). Smith, Lizotte, Thornberry, & Krohn (1995) also found support for the importance of parental supervision for adolescents.

Two related family dimensions have been shown to be effective protective factors. Research has found that communication between child and parent (Blum, Ireland, & Blum, 2003; Fitzpatrick, 1997; Gest et al., 1993; O'Donnell et al., 2002; Stouthamer-Loeber et al., 2002) and parental involvement in their children's activities (Franke, 2000; Stouthamer-Loeber et al., 2002; Sullivan, 2006) reduces the probability of violent behavior.

As children move through early adolescence, arenas other than the family begin to take on increasing importance. In particular, school and the peer networks become more salient. Interactional theory specifies that some children will be insulated against risk or be able to cope with negative influences because they otherwise have the capacity to do well in the academic arena. Rutter (1985) suggests that there are two reasons for this. First, academic success leads to higher self-esteem and self-efficacy and, second, more capable children develop more sophisticated problem-solving skills (Fraser et al., 2004; Rutter, 1979; 1985). For example, Sampson, Morenoff, and Raudenbush (2005) found that having high verbal/reading ability insulated youth at various developmental stages from violent behavior. Stouthamer-Loeber et al. (2002) found that high scores on the California Achievement Test and reading competency insulated youth from violence. Actual performance in school (grade point average) has also been found to be a protective factor for youth in both childhood and adolescence (Blum et al., 2003; Stouthamer-Loeber et al., 2002).

A number of studies suggest that the degree to which a child is bonded or committed to school buffers risks for early aggression and later violence (Blum et al., 2003; Franke, 2000; O'Donnell et al., 2002; Reppucci, Fried, & Schmidt, 2002; Rodney, Johnson, & Srivastava, 2005; Smith et al., 1995; Sprott, Jenkins, & Doob, 2005; Stouthamer-Loeber et al., 2002; Wright & Fitzpatrick, 2006). Sprott et al. (2005) focused exclusively on the school bond as a protective factor. They used two cycles of data from the Canadian National Longitudinal Study of Children and Youth, assessing risk and the school bond at ages 10 and 11 and measuring violent and nonviolent delinquency at ages 12 and 13. They found that their measure of the school bond protected children at risk for early delinquency from later violent offending.

Rodney et al. (2005) raise the question of whether the protection provided by the school bond is effective in later adolescence. Their examination of school-related protective factors was embedded in an evaluation of the effectiveness of the Family and Community Violence Prevention program. This program was school-based, addressing academic development, personal development, family bonding, cultural enrichment, recreational enrichment, and career development. They found that the program was effective in reducing the rate of violence for both boys and girls under 12. However, for older boys and girls it was not

effective. In addition, they found that academic performance and school bonding reduced involvement in violence. Teachers can also have an insulating impact on at-risk youth (Fitzpatrick, 1997; O'Donnell et al., 2002; Smith et al., 1995).

Later in the developmental stage, graduating from high school (or receiving a GED) may represent a critical transition that can change the trajectory of participation in violent delinquent behavior (Bernburg & Krohn, 2003; Sampson & Laub, 1993). For example, attending college is expected to increase resiliency (Hawkins et al., 1992; Newcomb & Bentler, 1988). College may be a less criminogenic environment, with fewer peers who are involved in violence. Research has clearly demonstrated that peers become a more important influence on short-term decision making than parents as youth go through the adolescent years (Thornberry & Krohn, 1997). Typically, the focus has been on the degree to which the peer group engages in delinquent behavior (Thornberry & Krohn, 1997; Warr, 2002). However, being involved with prosocial youth and having them provide social support increases resilience to violence (O'Donnell et al., 2002; Stouthamer-Loeber et al., 2004).

An implication of adopting a life-course perspective is the focus on criminal careers beyond adolescence. Interactional theory has not only addressed the risk factors for continued involvement in violent behavior, but also has examined the factors that can deflect youth from a criminal career. In spite of the potential impact of violent behavior on the transition from adolescence to adulthood, most youthful offenders do not go on to have adult criminal careers.

Current empirical evidence suggests that being married and being committed to a “quality marriage” (Laub, Nagin, & Sampson, 1998) are likely to be sources of both social control and social capital that reduce the likelihood of continued violent behavior (Kandel, Davies, Karus, & Yamaguchi, 1986; Kandel &Yamaguchi, 1987; Laub et al., 1998; Rand, 1987; Warr, 1998). Consistent with this view, Bachman, Wadsworth, O'Malley, Johnston, and Schulenberg (1997) found that marriage decreased drug use while divorce led to comparable increases. Having children reduces marijuana use (Brown, Glaser, Waxer, & Geis, 1974; Esbensen & Elliott, 1994; Yamaguchi & Kandel, 1985). Stable employment and commitment to work have similar consequences (Glaser, 1969; Kandel & Raveis, 1989; Trasler, 1979; Uggen, 1999; Uggen & Kruttschnitt, 1998). These major transitions have both direct effects on producing desistance and indirect effects via the changes they produce in social networks (Knight & West, 1975; Warr, 1998).

This brief overview of interactional theory has identified a number of predicted protective factors within different domains. Many of these protective factors are hypothesized to operate differently at different developmental stages. Interactional theory predicts that during mid adolescence the family domain continues to have an impact on violent behavior, but one which is more likely to be indirect and weaker than it had been in early adolescence. This is because school and peers become more salient. In addition, by middle adolescence, the influence of delinquent values is expected to be stronger as youth who commit delinquent behavior become more embedded in a culture and peer group that supports such behavior. However, many adolescents who engaged in violent behavior during their early teenage years do not continue to do so as they enter early adulthood. Interactional theory posits that this is due, in large part, to changing life circumstances. For many youth, conventional activities become more influential as they begin to attend college, seek career-oriented employment, or enter the military. The influence of the family of origin is predicted to have a decreasing influence on behavior while one's own family and partner relationships increase in importance.

Methods

Background

Lifecourse researchers look to see how time-varying covariates can explain trajectories of offending (Osgood, 2005). Recidivism researchers tend to focus on static factors that are present at the time of the incident event (Bonta, Harman, Hann, & Cormier, 1996) using an approach that has much in common with the search for risk factors for violence and delinquency in the developmental psychology literature (Hawkins et al., 1992; Rutter, 1985; Stouthammer-Loeber et al., 2004).

Recently, this risk-based research has begun to change as scholars begin to focus on risk and needs assessments of those involved in the criminal justice system. These changes were documented nicely in a recent special issue on Risk-Needs-Responsivity (RNR) in the Recidivism Context in *Crime & Delinquency*[3]. We see the RNR approach as bridging the prior gap between recidivism and desistance research and making such research align more closely with life course theoretical approaches.

Recidivism scholars are interested in creating risk prediction tools that can be used by practitioners to predict the risk of recidivating and identify the criminogenic needs of the individual offender. The use of these tools has expanded rapidly during the last 10 years, with over half of all U.S. states now using some type of risk prediction instrument in parole and probation (Harcourt, 2007), and at least one state (Virginia) using a formal risk prediction tool at sentencing (Kleiman, Ostrom, & Cheesman, 2007). Initially, only static factors present at the time of the incident event, like criminal history, were used, but in the more recent generation of risk prediction tools, dynamic factors that have changed as the person progresses through the criminal justice system are also included (Andrews et al., 2006; Bonta & Andrews, 2007).

The use of these tools is guided by the risk principle, which argues, first, that risk can be predicted, and second, that higher risk offenders should be treated differently, usually with more intense levels of treatment (Lowenkamp, Latessa, and Holsinger 2006). The risk principle, which is a bedrock principle in this field, is supported by research that shows that treatment programs interact with different levels of risk to generate different outcomes across risk levels, with higher risk individuals showing more benefits from more intense treatment programs (Lowenkamp, Latessa, & Holsinger, 2006; Marlowe, Festinger, Lee, Dugosh, & Benasutti, 2006; Taxman & Thanner, 2006). The search for treatment programs that are effective for those at highest risk of recidivating is analogous to the more general search for protective factors in the developmental psychology literature.

This search for interactions, or differential responsivity by risk level, provides a nice connection back to the desistance literature, and the lifecourse/developmental literature more broadly. Although lifecourse criminologists are more skeptical about the ability to predict risk,[4] they have also started to look at the differential impact of causal factors on people with different levels of criminal propensity (essentially criminal risk). The most prominent example is a paper by Bradley Wright, Avshalom Caspi, Terrie Moffitt, and Phil Silva (2001) which found that pro-social ties, such as education, employment, family ties, and partnerships, deterred crime most strongly among individuals with low self-control as measured in both childhood and adolescence. Other prominent examples include work by

[3]*Crime & Delinquency*, Volume 52, Issue 1, January 2006.

[4]This difference in the predictability of risk comes in part from a difference in time frame. The RNR scholars are typically concerned with a short time span (within three years after release from supervision), while criminologists have typically looked at the question over a much longer time period (up to 30 years). For example, see Gottfredson and Gottfredson, 1994, Auerhahn, 1999, and, more recently, Bersani, Nieuwbeerta, and Laub, 2009.

Nagin and Paternoster (1994), Laub et al. (1998), Blokland and Nieuwbeerta (2005), Tittle and Botchkovar (2005), and Ousey and Wilcox (2007).

The primary methodological difference among these papers lies with how different researchers predict criminal propensity. Wright et al. (2001) use measures of self control and impulse control in both childhood and adolescence to create a summary measure of criminal propensity which is then interacted with a set of dynamic social factors. Ousey and Wilcox follow a similar approach. Laub et al. (1998) and Blokland and Nieuwbeerta (2005) on the other hand use semi-parametric trajectory methods (Nagin, 2005; Nagin & Land, 1993) to identify groups of individuals with relatively similar paths of offending over time. They then look at whether the effect of a given dynamic factor such as marriage varies across the groups. Members of different groups are assumed to have different "criminal propensity" as reflected in the trajectory groups.

One criticism of the latter method is that offenses from the entire lifecourse are used to create the trajectories, including offenses that happened after the social event in question. This is problematic, since the social event could have affected the offending pattern. More generally, it violates the premise that the risk must be defined prior to the occurrence of the protective factor.

Haviland and Nagin (2005) have proposed a method which eliminates this problem in a different context.[5] Their method identifies a fixed point in time when an event or treatment occurs, and then uses both offending trajectories and other available measures of criminal propensity to create a summary measure of propensity to encounter the event in question, usually something like marriage, or employment. This measure is then used to create otherwise similar pairs of individuals who either have or have not experienced the event in question. Examples in the literature include a paper by Apel, Bushway, Brame, Haviland, Nagin, and Paternoster (2007) looking at the impact of adolescent work on crime and a paper on the impact of first imprisonment on future criminal involvement by Nieuwbeerta, Nagin, and Blokland (2009).

In what follows, we apply the Haviland and Nagin approach (2005) to create a more comprehensive measure of criminal propensity based on growth curves for an otherwise standard risk and protection analysis. Trajectories have both theoretical and empirical utility in the pursuit of interactional theory's approach to identifying protective factors. Theoretically, trajectories take into account interactional theory's emphasis on the cumulating effects of participating in criminal behavior over time. They are not static measures but rather explicitly acknowledge the dynamic nature of crime and development. Trajectories have the potential to take into account interactional theory's recognition of the fact that there are diverging behavioral trajectories for adolescents influenced by time-varying changes and conditions. This approach also provides a measure of risk that efficiently summarizes results from past years. Furthermore, the criminal risk scores created using the trajectories do an excellent job of predicting offending in the next time period.

Data

The current study uses data from the Rochester Youth Development Study (RYDS), an ongoing longitudinal study investigating the causes and consequences of serious, violent, and chronic delinquency. To date, the RYDS has completed fourteen interviews for a panel of subjects from their early teenage years through their early 30s. When the study began in 1988, 1000 seventh and eighth graders in the Rochester (New York) Public School System

[5]Haviland and Nagin are trying to identify people who have similar chances of experiencing certain life events like prison or work. RNR researchers are trying to identify people who have similar levels of risk for experiencing crime/violence/delinquency.

and one of their parents or guardians were interviewed. The current study uses data from the first 12 waves of data collection, when respondents were between the ages of 14 to 23.

The original RYDS sample was stratified on two dimensions to provide respondents who were at high risk for violence and serious delinquency. First, males were oversampled (75% versus 25%) as they are more likely than females to engage in serious and violent offenses (Blumstein, Cohen, Roth, & Visher, 1986; Huizinga, Morse, & Elliott, 1992). Second, students from areas of Rochester where many adult offenders live were also oversampled due to the assumption that adolescents who live in such areas are at greater risk for offending than are students living in areas where proportionately fewer offenders live. High residential offender areas were identified by assigning each census tract in Rochester a resident arrest rate that reflected the proportion of the tract's total adult population arrested by the Rochester police in 1986. Students were sampled proportionate to the rate of offenders living in each tract. The highest one-third of resident arrest rate tracks was sampled with certainty.

The data used in the current study spans two phases of data collection. Phase 1 of the RYDS covered the subject's adolescent years between the ages of 14 and 18. During this time, we interviewed each subject (G2) nine times (or waves) and their parent or guardian (G1) eight times at six-month intervals, ending in the spring of 1992.[6] After a two-year gap in data collection, Phase 2 began in 1994 and covered subjects' ages of 21 to 23. During Phase 2, subjects and parents were interviewed annually. The subject panel is 68% African-American, 17% Hispanic, and 15% White. These proportions are quite close to what was expected given the population characteristics of the Rochester schools and the decision to oversample high-risk youth. Compared to other longitudinal studies, subject attrition is quite low. From Wave 2 to 12, we experienced only 1% attrition per year. At Wave 12, 85% (846) of the initial 1000 subjects were reinterviewed; parent interviews were completed for 83% of the respondents.

Table 1 presents basic characteristics of the total panel (at Wave 1) and the Wave 12 sample. As the table shows, the distributions for age, gender, race/ethnicity, census tract, and involvement in antisocial behavior are virtually identical for the total panel and the Wave 12 respondents. In a more formal test of differential attrition, Krohn and Thornberry (1999) compared those retained and those not retained at Wave 12 on multiple dimensions, including gender, social class, family structure, drug use, delinquency, property crime, and violent crime for the total panel and for each racial or ethnic group. None of the significance tests reached statistical significance ($p < 0.05$).

Measurement

The current study uses data from Waves 1 through Wave 12 from both the student and parent interviews. Below we describe the violence outcome measures, our conceptualization of risk, and the protective factors. A number of potential protective factors are included in the analysis that follows. They may be included as individual measures, as part of cumulative measures, or both. The variables used as protective factors have each been used in prior RYDS analyses and have been shown to have good measurement properties (see Thornberry et al., 2003). A summary table showing when each outcome, risk factor, and protective factor was measured is found in the appendix.

[6]Although admittedly a bit foreign at first, we find using the language of G1 and G2 helps us to be precise about exactly who we are discussing.

Violence Outcomes—Two measures of behavior reflecting violent behavior or the potential for violence constitute the outcome measures examined, both collected at Waves 8 and 12. Violence and the potential for violence have serious consequences for both the perpetrators of such behavior and their victims and therefore are the target of many prevention programs. Violence Prevalence is a subscale of a self-report general delinquency index based on the work of Elliott, Huizinga, and Ageton (1985). The six items included in this measure are attacking someone with a weapon, other assault, gang fighting, throwing objects at a person or persons, robbery, and rape. This prevalence measure is a dichotomous variable, indicating whether or not the subject has engaged in any of the above behaviors during the wave of interest. In order to determine if different results are found when taking into account how often offenders commit such behavior, Violence Incidence, indicating the actual number of times a subject engaged in the above behaviors, is included as well. Because this measure is skewed, it is logged in the subsequent analysis. Finally, carrying a gun or a weapon can increase the probability of violent behavior and we therefore include a Gun or Weapon Carrying as a separate outcome variable. Because it is a relatively low frequency behavior we include only a dichotomous measure of whether or not the respondent carried a hidden weapon during the wave of interest.

Risk—Recall that our violence outcomes are measured at Waves 8 and 12. In the subsequent analyses, we measure risk at the waves immediately prior to our outcomes, Waves 7 and 11. We want to make it clear that we are measuring risk in such a way to ensure risk precedes the protection and outcomes measures. We use offending trajectories to generate predictions of risk for violence at the wave prior to the outcome wave of interest. Measuring risk in this way involves a number of steps.

Our first step involved estimating offending trajectories for respondents. Trajectories, or growth curves, build upon the logic that past behavior is the best predictor of future behavior. Trajectories use developmental information from prior waves, and have been shown to have more predictive power than the same criminal history information entered in a non-linked way (Haviland & Nagin, 2005). Consistent with developmental theory, the pattern of behavior over time matters. We argue that these differential patterns of latent propensity for offending in the past will indicate differing levels of risk for future violence.

To measure risk at Wave 7, we first estimated trajectories of violence prevalence and gang violence for Waves 1 through 6. We used model selection techniques described by Nagin (2005) to identify four violence prevalence trajectory groups and two gang fighting prevalence trajectory groups. We then estimated each person's posterior probability of belonging to each group, essentially creating a unique trajectory for each person. For example, someone might have a 20% probability of belong to group 1, and an 80% probability of belonging to group 2. Their unique trajectory is a weighted average reflecting 20% of the group 1 trajectory and 80% of group 2. This approach eliminates the concern that we are treating all members of the group as homogenous (Raudenbush, 2005).

Next, we used each subject's probability of belonging to each violence prevalence trajectory group (omitting the lowest offending group as the reference group) and the probability of belonging to the higher of the two gang fighting prevalence trajectory groups to predict the violence outcome of interest at Wave 7. Then, we calculated the predicted values of this Wave 7 outcome for each subject. This predicted value becomes our measure of predicted risk for violence at Wave 7. Because we predict three violence outcomes, each subject has three predicted risk scores at Wave 7; one for violence prevalence, one for violence incidence, and one for gun or weapon carrying. In equation 1, PR_{7i} represents the subject's predicted risk at Wave 7, Gang2 represents the probability of belonging to the higher of the

two gang fighting prevalence trajectory groups, and TG2, TG3, and TG4 represent the probability of belonging to the three highest violence prevalence trajectory groups.

$$\mathrm{PR}_{7\mathrm{i}}=\alpha_1+\alpha_2\mathrm{Gang2}+\alpha 3\mathrm{TG2}+\alpha_4\mathrm{TG3}+\alpha_5\mathrm{TG4}+\varepsilon_{\mathrm{i}} \quad (1)$$

Measuring risk at Wave 11 involved a similar process. We estimated trajectories of violence prevalence and gang violence for Waves 1 through 10. The additional information contained in the later waves allowed us to identify five violence prevalence trajectory groups and three gang violence trajectory groups. As before, we then used each subject's probability of belonging to each violence prevalence trajectory group (again, omitting the lowest offending group as the reference group) and the probability of belonging to each of the two highest gang fighting prevalence trajectory groups to predict the violence outcome of interest at Wave 11. Next, we calculated the predicted values of this Wave 11 outcome for each subject. The predicted “criminal propensity” becomes our measure of predicted risk at Wave 11. Again, each subject has three predicted risk scores, one for each violence outcome. In equation 2, $\mathrm{PR}_{11\mathrm{i}}$ represents the subject's predicted risk at Wave 11, Gang2 and Gang3 represent the probability of belonging to the two highest of three gang violence trajectory groups, and TG2, TG3, TG4, and TG5 represent probability of belonging to the four highest violence prevalence trajectory groups.

$$\mathrm{PR}_{11\mathrm{i}}=\alpha_1+\alpha_2\mathrm{Gang2}+\alpha_3\mathrm{Gang3}+\alpha_4\mathrm{TG2}+\alpha_5\mathrm{TG3}+\alpha_6\mathrm{TG4}+\alpha_7\mathrm{TG5}+\varepsilon_{\mathrm{i}} \quad (2)$$

This strategy of risk measurement is an efficient way of summarizing a great deal of information on the prior behavior of subjects. The typical approach in risk and protection research has been to interact many risk and protective factors, but this produces an unwieldy number of interaction terms. Moreover, it can leave the researcher with the problem of not being able to determine which interactions are significant beyond chance. By contrast, using this trajectory-based approach reduces the number of equations one must estimate. It also focuses risk directly on the past behavior of a subject, rather than relying on many indirect measures. Risk is a dynamic construct, changing as subjects age. Trajectories account for this dynamic nature, whereas the traditional method of risk measurement does not. This aspect of trajectories makes the approach more congruent with our conceptualization of risk in a lifecourse framework. In sum, the trajectory approach used here is a theoretically relevant, powerful, and succinct way to capture risk.

Protective Factors—Protective factors are measured within three domains: Individual, Family, and Environmental. For each protective factor, a higher value means more protection on that measure. Potential protective factors are measured at Waves 8 and 12, one wave after the measures of risk. We measure protection after risk to distinguish it both empirically and conceptually from risk (Fraser et al., 2004; Rutter, 1985). Rather than treating risk and protection as opposite ends of a continuum, we treat protection as a factor that moderates or buffers the effect of risk (see Krohn et al., forthcoming). We are interested in specific factors that may decrease the probability of violent behavior in the presence of risk, as well as how those individual factors may change as an individual moves through the life course. Therefore, we include individual variables as well as cumulative variables both within and across domains; both of these are described below.

Cumulative domain protective factors were created by counting the number of protective variables for which an individual scored in the top quartile of that variable's distribution, dividing by the total possible number of protective variables present in the domain, and multiplying by 100. Essentially, these variables represent the percent of total possible protective factors within a domain. As a note, no more than 40% of the variables at Waves 8

and 12 could be missing in the order to create the cumulative domain variable. If more than 40% of the variables were missing then the cumulative domain variable was coded as missing.[7]

Specific protective factors differed by wave. At Wave 8 the Individual protection domain is comprised of educational aspirations, self-esteem, and academic achievement. All of these measures are self-reported by G2. Educational aspirations is a scale of two items measuring G2's aspirations to attend college.[8] Self-esteem is a nine-item scale measuring G2's self-esteem. Academic achievement is measured by the average letter grade obtained by G2 at Wave 8 (e.g., A, B, C, D, F).[9]

Attachment to parent, parental supervision, parental involvement in conventional activities, parental support, parent partner status, and parent harmonious partner were combined to form the Family protection domain.[10] Attachment to parent is an eleven-item scale measuring G2's self-reported attachment to their primary caregiver. Parental supervision is a four-item scale measuring G2's report of G1's supervision. Parental involvement in conventional activities is a G2 report of G1's average level of involvement in a variety of G2's conventional activities, such as music, sports, school clubs, or religious activities. Parent support is the average level of support G2 reports G1 exhibiting across five items (helping with important decisions, giving or loaning money, talking about trouble at school or work, talking about trouble with a friend, and going places or doing things together). Parent partner status and parent harmonious partner are both G1 reported measures. Parent partner status is a dichotomous measure indicating whether G1 had a partner at Wave 8. Parent harmonious partner is calculated only for G1s who report having a partner at Wave 8 and is an average of eight items indicating the extent to which the relationship is harmonious.

The Environmental protection domain included ten items; commitment to school, attachment to teacher, being enrolled in or having completed high school or a General Equivalency Degree (GED), involvement in conventional activities, peer involvement in G2's conventional activities, group conventional behavior, parenting support from others, parent support from family, parent support from friends, and parent support from neighbors.[11] Commitment to school, attachment to teacher, being enrolled in or having completed high school or a GED, involvement in conventional activities, and peer involvement in G2's conventional activities are G2 self-reported measures, while group conventional behavior, parenting support from others, parent support from family, parent support from friends, and parent support from neighbors are G1 reported measures.

Commitment to school is a ten-item scale measuring G2's school commitment. Attachment to teacher is a five-item scale measuring G2's attachment to his or her teachers. Being enrolled in or having completed high school or a GED is a dichotomous measure indicating whether G2 was enrolled in high school or had received a high school diploma or GED at Wave 8. Involvement in conventional activities is measured as the percent of all possible

[7]Constructing the measures this way, no more than 11% of the total valid sample was coded as missing on any of the cumulative protection domain measures.

[8]Cronbach's alpha reliability scores can be found for all scale variables in Table 3.

[9]Note that A=5 and F=1. If the average grade at Wave 8 was missing, we used average grade at Wave 7. If Wave 7 was missing, we used the average grade at Wave 6, and if Wave 6 was missing, we used Wave 5. If G2 was not enrolled in high school at Wave 8, this measure was coded missing. We did this because we believed academic achievement would offer little protection to subjects not enrolled in school during the wave of interest.

[10]We did not use parent harmonious partner as an individual protective factor, but it is described because of its inclusion in the cumulative measure.

[11]We did not use involvement in conventional activities, peer involvement in G2's conventional activities, or parent support from family as individual protective factors, but they are described because of their inclusion in the cumulative measure.

conventional activities (e.g., music, sports, or religion) in which G2 participated at Wave 8.[12] Peer involvement in G2's conventional activities measures the average level of peer involvement in a variety of G2's conventional activities. Group conventional behavior is an average of the Yes/No responses to six items about the extent to which G2's peers are involved in conventional activities. Parenting support from others is a three-item scale indicating the average level of support that G1 receives from others for parenting related matters. Parent support from family, parent support from friends, and parent support from neighbors are four-item averages indicating the average level of social support G1 receives from these groups.

The individual variables at Wave 12 differed slightly, and all are G2 self-reported measures. At Wave 12, there was no Individual protection domain. The Family protection domain was comprised of attachment to parent, parental support, and partner status. Attachment to parent and parental support are eleven-item scales indicating G2's level of attachment to and the level of support they receive from their primary caregiver, respectively. Partner status is a dichotomous measure of whether G2 reported having a partner at Wave 12.

The Environmental protection domain at Wave 12 also differed slightly from Wave 8. It includes being enrolled in or having completed high school or a GED, college enrollment status, and being employed continuously from age 19–21. All of these measures are dichotomous, indicating respectively whether G2 has received a high school diploma or GED, was enrolled in college, and was employed 100% of the time from age 19 to 21 at Wave 12.

Although not included in the cumulative domain measures described above, three additional measures were used individually as protective factors at Wave 12. Attachment to child is an eleven-item scale of G1's reported attachment to G2. Partner satisfaction and perceived support from partner are G2 self-reported measures calculated only for G2's who report having a partner at Wave 12. Partner satisfaction is a seven-item scale of how satisfied G2 is with their partner, while perceived support from partner is a seven-item scale measuring the extent to which G2 feels they can rely on their partner.

Both at Wave 8 and Wave 12, a total cumulative protection variable represents the percent of all total possible protective factors present. Finally, at Wave 8 the cumulative protection across domains variable represents the percent of all possible domains in which protection is present.[13]

Analysis

In order to evaluate the impact of protective factors in reducing violent offending at Wave 8, we estimate an equation predicting the outcome of interest at Wave 8 using the predicted risk score for the same outcome at Wave 7, a specific protective factor, and the interaction between the two. Similarly for Wave 12, we estimate an equation predicting the outcome of interest at Wave 12 using the predicted risk score for the same outcome at Wave 11, a specific protective factor, and the interaction between the two. This is very similar to what is done in the RNR literature, where an individual's risk score is interacted with the treatment program being evaluated.

$$\text{Violence}_{8i}=\alpha_1+\alpha_2\text{PR}_{7i}+\alpha_3\text{PF}_i+\beta_1\text{PR}_{7i}{}^{*}\text{PF}_i+\varepsilon_i \quad (3)$$

[12]This is measured as a percentage score because the number of activities in which G2 can participate differs from wave to wave and depends on whether G2 is enrolled in school.

[13]This measure could not be calculated for Wave 12 because we only had two cumulative domain measures.

$$\text{Violence}_{12i}=\alpha_1+\alpha_2\text{PR}_{11i}+\alpha_3\text{PF}_i+\beta_1\text{PR}_{11i}{}^{*}\text{PF}_i+\varepsilon_i \quad (4)$$

Equation 3 represents how the Wave 8 outcomes are predicted. In equation 3, Violence_{8i} represents the violence outcome at Wave 8, PR_{7i} represents the subject's predicted risk score at Wave 7, PF_i represents the protective factor, and $\text{PR7}_i{}^{*}\text{PF}_i$ represents the interaction between the predicted risk score and the protective factor. Similarly in equation 4, Violence12i represents the violence outcome at Wave 12, PR_{11i} represents the predicted risk score at Wave 11, PF_i represents the protective factor, and $\text{PR}_{11i}{}^{*}\text{PF}_i$ represents the interaction between the predicted risk score and the protective factor.

Results

Figure 1 (Panels 1 and 2) displays the trajectories of risk for violence and gang fighting through Wave 6. The violence trajectories display some of the basic patterns found in earlier work with the RYDS data with general offending behavior, with both stable high (Group 3) and stable low (Group 1) trajectories of violence, as well as some evidence of change, with Group 4 showing a dramatic increase in violence prevalence and Group 2 showing a less dramatic but still important decline in violence. The gang trajectories, on the other hand, essentially differentiate between those with a high probability and those with a low probability of gang fighting. As shown in Panels 3 and 4 of Figure 1, the story becomes more nuanced by Wave 10, with both models requiring an additional trajectory to accurately describe the patterns observed in the sample. As people age, they change – and these models capture this change by allowing for additional trajectories. Panel 3 shows a more shaded picture of desistance, with two groups experiencing declines in violence over this period (Groups 3 and 4) representing 50% of the population. Panel 4 shows that most people desist from gang fighting by their early 20's, but some people (Group 2) desist by age 17, while others (Group 3) take longer. The change in the trajectories from Panel 1 to Panel 3 for violence and from Panel 2 to Panel 4 for gang membership highlights the importance of the dynamic framework inspired by interactional theory. These trajectories provide a dynamic description of risk that not only changes over time, but contain information about the past patterns of behavior that would not be present if past behavior was simply included as a lagged explanatory variable

Table 2 provides the results of the regressions based on Equations 1 and 2. These regressions simply use the posterior probability of group membership in the violence and gang trajectories to predict violence prevalence, incidence and weapon carrying at Waves 7 and 11. Since these are essentially models with lagged dependent variables, it is hardly surprising that most coefficients are statistically significant. Past behavior predicts future behavior. It is also not surprising that the groups with the highest absolute levels of risk at Wave 6 (Violence Group 4 in Wave 7 and Violence Group 5 in Wave 11) have sizeable coefficients – but it is interesting to note that the this group has experienced a great deal of change in the Wave 6 model (Group 4). Moreover, Groups 2 and 4 in the Wave 11 violence model also are highly correlated with risk, despite very different patterns of violence. It is simply not the case that everyone with a prior history of violence has the same level of risk. Clearly, the different articulations of development presented by the trajectory models are useful for predicting risk.

Having predicted risk, we will use the predicted values from these models to predict behavior at Waves 8 and 12. In other words, we identify risk as just that part of Wave 7 (and 11) offending that was predictable based on the trajectories of offending. We then use this as our measure of risk in the analysis of Wave 8 and 12 behavior. Table 3 provides the

descriptive statistics for the violent outcomes and promotive factors for the entire sample, as well as for subjects that are both above the median and below the median on levels of risk. The outcomes at both Wave 8 and 12 are worse (larger means indicate more violent offending) for those at higher risk for violence and gun carrying, and the difference is significant in all cases. For example, at Wave 8 the mean level of violence prevalence for those below the median risk was 0.066, compared with 0.342 for those above the median risk. The difference is also substantively large. Those above the median on risk engage in violence 34.2% of the time during Wave 8, while those below the median on risk engage in violence 6.6% of the time during Wave 8. In other words, those above the median on risk are 418% more likely to engage in violence in Wave 8 than in those who are below the median on risk. The difference is large but less extreme in Wave 12, with a 274% difference.

The promotive factors are also universally worse for those with higher risk, and this difference is significant in most cases. This is not surprising, since those at high risk for violence have individual, family and environmental deficits that contribute to their high levels of risk. For example, at Wave 8 those with higher risk have a mean value of 21.699 on the measure of involvement in conventional activities, compared to 27.930 for those at lower risk. Similarly, those at higher risk have a mean of 0.740 on the measure of being enrolled in or completed high school or a GED, whereas those at low risk have a mean of 0.854. Since this is a dichotomous measure, it tells us that 85% of lower risk subjects are in enrolled in school, compared to only 74% of higher risk subjects.

The question we ask in this paper is whether positive factors in each of these domains can have a protective impact on those with high risk, conditional on the fact that these individuals will experience these factors less often than low risk individuals, on average. Changing these levels using policy manipulations is not easy, but it can be done. Our goal is to focus attention on which promotive factors have the best potential to protect those at high risk at our two different age periods.

Table 4 presents the summary results of our analysis. The full regression results are available upon request. Starting with Violence Prevalence in Wave 8, we only found two factors that promote less violence for everyone, our cumulative measure of protection in the Family Domain and Attachment to Teacher. However, we did find that Academic Achievement and Cumulative Protection in the Environmental Domain could be protective for those students who are particularly at risk for violence.

The prospect of protection largely disappears by Wave 12 for violence prevalence. We found no evidence that any factor could protect those at high risk for involvement in violence by Wave 12. On the other hand, having a parent who is still Attached to the Child when that child is a young adult, as well as having a satisfactory relationship with a partner and being Employed during this period promote less violent involvement for all people in Wave 12. This latter result is entirely consistent with prior work by life course scholars like Laub and Sampson (2003), who claim that romantic relationships and work will lead to less crime.

The basic pattern of results – with protection at Wave 7 largely disappearing by Wave 12 – also holds for both Violence Incidence and Gun or Weapon Carrying. Cumulative Protection across all domains promotes fewer acts of violence for everyone in our sample at Wave 8, but there are no other general promotive factors in the analysis. Instead, we found a total of nine factors that could protect those at risk for higher amounts of violence from engaging in such acts. Total Cumulative Protection across all domains is particularly helpful for those at risk, with the cumulative protection in the Family and Individual Domains appearing to be highly salient. Educational Aspirations, Self-Esteem, Academic Achievement, Parental

Support, Parent Partner Status, and Group Conventional Behavior all appear to be particularly protective for those at risk for involvement in violent acts. Keeping adolescents focused on school, feeling good about themselves, and involved with conventional peers all seem to be productive avenues for protecting our youth. Parental Support and Partner Status also matter, showing that parents still matter, even in mid to late adolescence (Apel & Kaukinen, 2008).

In fact, Parental Support is the only protective factor to still matter by Wave 12 for violence incidence. Parental Support and Attachment to Child also promote less violence for everyone in the sample at Wave 12. Consistent with the results for Violence Prevalence, Perceived Support from Partners for those with partners is also helpful by Wave 12.

The results are even more dramatic for Gun and Weapon Carrying. Only one factor promotes less gun carrying at Wave 12 (Attachment to Child), and there are no Protective Factors. In contrast, there are 10 factors that promote less Gun and Weapon Carrying at Wave 8, including the cumulative factors in all three domains. There is apparently much that can be done to suppress the risk of gun and weapon carrying in mid adolescence. And, even with all of these promotive factors, there are still things that can be done to protect those at high risk for gun and weapon carrying. Total Cumulative Protection and Cumulative Protection in the Environmental Domain, which includes school, can help protect those most at risk for gun carrying in Wave 7 from Gun and Weapon Carrying in Wave 8. Parental Involvement in Conventional Activities also protects those who are at high risk for gun and weapon carrying.

Conclusion

It is now common to lament the disconnect between recidivism and desistance research (Bushway, Brame, & Paternoster, 2004; Maruna, Immarigeon, & LeBel, 2004; National Research Council, 2007). In this paper, we take strides towards connecting these two disparate areas of research by conducting a recidivism analysis in the tradition of the Risks, Needs, and Responsivity researchers with theory, methods and data more commonly used to study desistance. Specifically, we apply interactional theory to generate hypotheses about the manner in which protection may change over the lifecourse, and we use growth curve methods from the area of desistance to generate dynamic measures of risk. We use ideas from both desistance and recidivism studies to look at the impact of different protective factors on individuals with different levels of risk. We test these ideas with data from the Rochester Youth Development Study. We focus on explaining violence incidence and prevalence, as well as the prevalence of gun and weapon carrying at both Wave 8 and Wave 12, when the youth are 17.5 and 23 years old, on average.

Interactional theory shares with other life course theories two emphases that we have examined in this paper. The theory suggests that different factors will predict, and as an extension, protect, against violent behavior at different stages in the life course. The theory also highlights the importance of accumulated events over time, as opposed to events in isolation. The results from our analyses partially support these hypotheses.

Clearly different factors either promoted or protected against violent behavior and gun carrying. Indeed, by Wave 12 when subjects were approximately 23 years of age, few factors promoted or protected against violent behavior whereas a number of factors were significant at Wave 8 when subjects were approximately 17.5 years of age. Perhaps the major result of this paper is that promotion and protection will be very difficult to change by the time individuals are aged 23. One possible explanation for this finding is that individuals are simply more embedded in violence by this stage. Violence hits its peak in the RYDS

dataset before age 18 and then drops quite precipitously. The violence prevalence at Wave 12 is a full 50% lower than it is at Wave 8 (10% vs. 20%, see Table 3). Individuals who are still involved in violence by age 21 are the most entrenched and committed offenders, and simply less amenable to change. Our results are consistent with other recent work by Kurlychek and Bushway (2010) that appears to show that hazard rates for offending are largely not dynamic – meaning that while people may be sorted into different categories of offending over time, there is little evidence that the rates of offending can be changed by time-varying covariates for entrenched individuals.

The failure to find more significant promotive and protective factors at Wave 12 may also be due to methodological reasons. There is less variation to study at Wave 12, and therefore the variation becomes harder to explain empirically. It is also possible that the design of the dataset contributed to the results. Up until Wave 9, data was collected in 6-month intervals, whereas data was collected annually in Waves 10 through 12. Therefore, the positive factors we study in Wave 12 are measured up to 1 year earlier than the data collection occurred, while the positive factors in Wave 8 are measured up to 6 months earlier.

We are skeptical that this change in measurement window drives our finding regarding the lack of promotive and protective factors. Our skepticism arises in part because the positive factors that are significant are very different in nature at wave 12 than they are in wave 8 as predicted by interactional theory (and most age-graded theories of crime). For example, partner satisfaction and employment are two of the three factors that can promote less violence prevalence in Wave 12 while partner support promotes violence incidence. These findings are not surprising and most life course theories recognize that as adolescents make the transition into young adulthood, partners become an increasingly important source of support and can protect high risk youth from violent behavior. The role of the relationship between subjects and their parents as promotive factors for violence prevalence, violence incidence, and gun carrying and as a protective factor for violence incidence is noteworthy. Although interactional theory would suggest that the importance of family relationship wanes in comparison to other factors in late adolescence (Thornberry, 1987) perhaps by the early adulthood years those children who continue to have good relationships or who have reconnected with their parents are less likely to be involved in violent behavior. However, to translate these findings into programmatic recommendations that would foster relationships between 23 year olds and their parents would be challenging, and given the few significant findings, is probably premature.

In contrast to the Wave 12 results, there were several factors that were either promotive or protective at Wave 8. Interactional theory highlights the importance of accumulated events over time, as opposed to events in isolation. As a result, we looked for evidence that experiencing positive events and factors over a number of dimensions could promote or even protect against involvement in violence and gun carrying. We found that Total Cumulative Protection was a major promotive factor for both Violence Incidence and Gun and Weapon Carrying in Wave 8, and that Cumulative Protection in the Environmental and Cumulative Family Domains were important for Violence Prevalence and Gun and Weapon Carrying. Additionally, the cumulative measures served as a protective factor for violence prevalence (the environmental domain), violence incidence (Total Cumulative Protection and the Cumulative Family and Individual Domains) and gun carrying (Total Cumulative Protection and Cumulative Environmental Domain). Recognizing that the combination of positive factors can operate across and within different domains suggests a multifaceted strategy in designing prevention and treatment programs.

We were impressed with the importance of school-related factors as both promotive and protective factors. The environmental domain, which was largely comprised of educational

factors, was important as a protective factor for both violence prevalence and gun carrying. In terms of individual factors, we found that Academic Achievement was either a protective factor or a promotive factor for all three dependent variables in Wave 8. We believe that these results are both empirically robust and substantively meaningful. Doing well in school during mid to late adolescence still matters, and although policymakers have little control over ability, knowing that education can matter during high school should provide extra support to the current wave of anti-dropout measures (Gates Foundation, 2010; Jimerson, Egeland, Sroufe, & Carlson, 2000).

Over the past several years, there has been an emphasis on identifying evidence-based programs targeted at delinquent and criminal behavior (Elliott, 1996). Many of these programs specifically target the educational arena. In addition, some are multifaceted in that they also include family and neighborhood factors. Our research demonstrates that those that target a combination of educational and family factors have the promise of being particularly effective for those offenders in the middle to late teenage years. While other research has arrived at similar conclusions, the way in which we measure risk in the current study provides for more confidence in this recommendation.

For older offenders, the policy recommendations are less clear. We did find that employment and partner satisfaction had protective qualities at these ages. Other analysis that is ongoing suggests that employment and other financial concerns have a direct impact on partner satisfaction (Krohn, Schmidt, Lopes, and Lizotte, 2011). As such it may be wise to invest efforts in addressing the financial prospects of these young adults to increase the probability of both partner satisfaction and, ultimately, to discourage continued violence.

Future work in this area of risk assessment should continue to exploit theory and methods from developmental criminology. Developmental theory directs us to recognize the importance of placing behavior within the context of what can be expected to happen at different life stages. Emphasis on the importance of stage-relevant variables when appropriate should greatly enhance both our understanding of behavior and what we need to protect people from participating in such behavior. RNR–type approaches will be enriched by more formal models of behavior that can then be brought to bear on policy-specific problems. Models defining risk in the way we did above allow for a more efficient way of discovering the factors that promote and protect against violence rather than trying to assess risk and promotive factors with a number of individual items.

One application of the method described in this paper that should be more thoroughly exploited is to compare the effectiveness of protective factors for different trajectory groups. Not all violent offenders share the same trajectory of violent behavior. For example, groups 3 and 4 in the Wave 8 analysis have similar offending rates but the shape of their trajectories are different. Does the shape of the curve influence which protective factors have more or less impact on violent behavior? Then too, it may be possible to accelerate the rate of desistance for certain trajectory groups by addressing specific protective factors relevant to the group. The techniques described above allow for more detailed analysis and should be pursued.

In this paper, we have attempted to demonstrate that the concerns of desistance and recidivism researchers are not only compatible but inform one another. By taking into account the trajectory of offending history and recognizing that those histories, combined with the development stage of the offender, may have implications for what factors may serve as protections against further participation in crime, we may be able to generate more nuanced understandings of why offenders do or do not desist. If successful, such an

approach could provide information necessary to design programs targeting factors at times in the life course of offenders when those programs will be most effective.

Acknowledgments

Support for the Rochester Youth Development Study has been provided by the Centers for Disease Control and Prevention (CE001295), the Office of Juvenile Justice and Delinquency Prevention (86-JN-CX-0007, 96-MU-FX-0014, 2004-MU-FX-0062), the National Institute on Drug Abuse (DA020195, DA005512), the National Science Foundation (SBR-9123299, SES-9123299), and the National Institute of Mental Health (MH56486, MH63386). Work on this project was also aided by grants to the Center for Social and Demographic Analysis at the University at Albany from NICHD (P30-HD32041) and NSF (SBR-9512290).

Appendix

APPENDIX

Measurement of Risk, Protection, and Outcome by Wave

Wave	1	2	3	4	5	6	7	8	9	10	11	12
Mean Subject Age	13.5	14.0	14.4	14.9	15.4	16.0	16.4	17.0	17.4	20.1	21.1	22.1
Risk												
Violence Prevalence Trajectories (4 group)	←---	-----	-----	-----	-----	---→						
Gang Violence Trajectories (2 group)	←---	-----	-----	-----	-----	---→						
Violence Prevalence Trajectories (5 group)	←---	-----	-----	-----	-----	-----	-----	-----	-----	---→		
Gang Violence Trajectories (3 group)	←---	-----	-----	-----	-----	-----	-----	-----	-----	---→		
Predicted Risk Scores							✖				✖	
Protective Factors												
Cumulative Prot. - Individual Domain								✖				
Educational Aspirations								✖				
Self-Esteem								✖				
Academic Achievement								✖				
Cumulative Prot. - Family Domain								✖				✖
Attachment to Parent								✖				✖
Parent Supervision								✖				
Parent Involvement in Conventional Activity								✖				
Parental Support								✖				✖
Parent Partner Status								✖				
Parent Harmonious Partner								✖				
Partner Status												✖
Cumulative Prot. - Environmental Domain								✖				
Commitment to School								✖				
Attachment to Teacher								✖				
Enrolled/Completed HS or GED								✖				✖
Involvement in Conventional Activities								✖				

Peer Involvement in Conventional Activities	✖
Group Conventional Behavior	✖
Parenting Support From Others	✖
Parenting Support From Family	✖
Parenting Support From Friends	✖
Parenting Support From Neighbors	✖
Group Conventional Behavior	✖
College Enrollment Status	
Employed Entire Time 19-21	
Attachment to Child	
Partner Satisfaction	
Perceived Support From Partner	
Outcomes	
Violence Incidence	✖
Violence Prevalence	✖
Gun or Weapon Carrying	✖

Biographies

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Marvin Krohn is a Professor in the Department of Sociology and Criminology & Law at the University of Florida. He is primarily interested in developmental approaches to the explanation of delinquency, drug use and crime. His co-authored book (with Thornberry, Lizotte, Smith and Tobin) *Gangs and Delinquency in Developmental Perspective*, won the 2003 American Society of Criminology's Michael J. Hindelang award for Outstanding Scholarship.

Alan Lizotte is Dean and Professor in the School of Criminal Justice, The University at Albany. He is co-principal investigator on the Rochester Youth Development Study, a twenty year ongoing longitudinal study of juvenile delinquency and drug use covering three generations of subjects. His substantive interests include illegal firearms ownership and use and developmental criminology. In 2003, together with his RYDS coauthors, he was awarded the American Society of Criminology's Hindelang Award for the book *Gangs and Delinquency in Developmental Perspective*.

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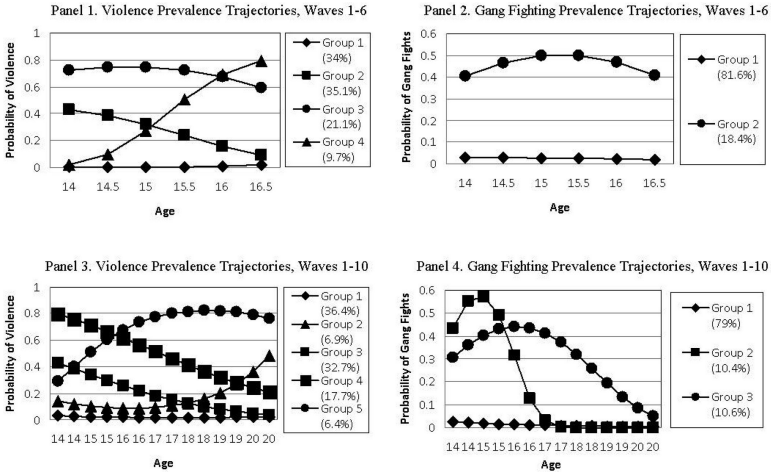

Figure 1.
Violence Prevalence Trajectory Groups and Gang Fighting Prevalence Trajectory Groups

Table 1

Respondent Characteristics of Total RYDS Panel and at Wave 12

	Total Panel	Wave 12
Mean Age	13.5	23.0
Gender		
Male	72.9	71.5
Female	27.1	28.5
Race/Ethnicity		
African-American	68.0	68.1
Hispanic	17.0	16.5
White	15.0	15.4
Census Tracts		
Grouped by Resident Arrest Rates		
1=highest	33.4	34.0
2	32.2	32.4
3	19.2	18.9
4	8.7	8.0
5	4.8	4.6
6=lowest	1.7	2.0
Ever Prevalence of Self-Reported		
Delinquency at Wave 1		
General	49.6	49.2
Property	17.7	18.0
Violent	30.6	30.6
Drug	8.0	7.9
Number of Respondents	1000	846

Table 2

Regression Models Predicting Risk for Violent Outcomes at Waves 7 and 11 from Trajectory Groups Probabilities.

	Wave 7			Wave 11		
	Violence Incidence	Violence Prevalence	Gun or Weapon Carrying	Violence Incidence	Violence Prevalence	Gun or Weapon Carrying
Violence Prevalence Trajectory Group Probabilities						
Group 2	0.082 (0.055)	1.437*** (0.393)	1.544*** (0.448)	0.365*** (0.067)	1.544*** (0.450)	2.189*** (0.481)
Group 3	0.506*** (0.068)	3.048*** (0.392)	2.723*** (0.446)	−0.005 (0.042)	0.006 (0.449)	0.976* (0.412)
Group 4	0.691*** (0.088)	3.941*** (0.458)	2.627*** (0.521)	2.128*** (0.521)	2.155*** (0.055)	2.128*** (0.422)
Group 5	--	--	--	0.353*** (0.076)	2.162*** (0.522)	2.109*** (0.520)
Gang Fight Trajectory Group Probabilities						
Group 2	0.053 (0.063)	−0.297 (0.281)	0.388 (0.293)	−0.089 (0.281)	−1.349* (0.618)	−0.562 (0.478)
Group 3	--	--	--	−0.093 (0.061)	−0.614 (0.423)	0.321 (0.373)
(Constant)	0.013 (0.033)	−3.321*** (0.301)	−3.641*** (0.353)	0.045 (0.024)	−2.818*** (0.266)	−3.089*** (0.287)

Standard errors are shown in parentheses.

* $p < 0.05$

*** $p < 0.01$

*** $p < 0.001$

Table 3

Means of Violent Outcomes and Promotive Factors for the Total Sample, and for Subjects Above the Median Risk and Below the Median Risk, Waves 8 and 12.

	WAVE 8			
	Total Sample	**Below the Median**	**Above the Median**	**α**
Violent Outcomes				
Violence Incidence*	0.247	0.065	0.430	
Violence Prevalence*	0.204	0.066	0.342	
Gun or Weapon Carrying*	0.197	0.089	0.306	
Individual Domain				
Educational Aspirations*	3.369	3.506	3.232	.46
Self-Esteem	3.260	3.280	3.241	.78
Academic Achievement*	3.166	3.230	3.088	
Family Domain				
Attachment to Parent	3.419	3.438	3.400	.87
Parental Supervision*	3.555	3.606	3.499	.56
Parent Involvement in Conventional Activities*	1.498	1.579	1.417	
Parental Support*	3.104	3.157	3.050	
Parent Partner Status	0.445	0.465	0.425	
Parent Harmonious Partner*	3.341	3.403	3.272	
Environmental Domain				
Commitment to School*	3.075	3.135	3.001	.81
Attachment to Teacher*	2.809	2.888	2.714	.63
Enrolled in or Completed HS/GED*	0.797	0.854	0.740	
Involvement in Conventional Activities*	24.822	27.930	21.699	.74
Peer Involvement in Conventional Activities	1.477	1.516	1.438	
Group Conventional Behavior*	0.840	0.881	0.796	
Parenting Support From Others	2.338	2.361	2.315	.68
Parenting Support From Family	2.989	3.017	2.961	
Parenting Support From Friends	2.526	2.565	2.486	
Parenting Support From Neighbors	2.009	2.027	1.991	
Cumulative Protection				
Total Cumulative Protection*	32.994	35.735	30.077	
Cumulative Protection – Individual Domain*	38.476	42.787	34.136	
Cumulative Protection – Family Domain*	27.469	29.977	24.839	
Cumulative Protection – Environmental Domain*	34.648	37.218	31.978	
Cumulative Protection Across Domains*	81.075	84.803	77.160	

	WAVE 12			
	Total Sample	**Below the Median**	**Above the Median**	**α**
Violent Outcomes				
Violence Incidence*	0.110	0.043	0.198	
Violence Prevalence*	0.100	0.046	0.172	
Gun or Weapon Carrying*	0.116	0.065	0.183	
Family Domain				
Attachment to Parent*	3.567	3.609	3.512	.87
Parental Support*	3.309	3.349	3.257	
Partner Status*	0.651	0.619	0.693	
Environmental Domain				
Enrolled in or Completed HS/GED	0.814	0.820	0.806	
College Enrollment Status*	0.350	0.407	0.271	
Employed Entire Time, 19–21*	0.301	0.357	0.226	
Attachment to Child*	3.586	3.628	3.533	.81
Partner Satisfaction	3.517	3.551	3.477	.85
Perceived Support From Partner	3.582	3.587	3.576	.83
Cumulative Protection				
Total Cumulative Protection*	42.533	44.616	39.796	
Cumulative Protection – Family Domain*	36.371	51.572	35.847	
Cumulative Protection – Environmental Domain*	48.104	36.765	43.597	

*Difference between people below and above the median risk is significant at the 5% level.

Table 4

Significant Promotive and Protective Factors by Wave and Outcome

	Wave 8	Wave 12
	Violence Prevalence	
Promotive Factors	Cum. Protection – Family Domain	Attachment to Child
	Attachment to Teacher	Partner Satisfaction
		Employed Entire Time 19–21
Protective Factors	Academic Achievement	(None)
	Cum. Protection – Env. Domain	
	Violence Incidence	
Promotive Factors	Cum. Protection Across Domains	Attachment to Child
		Parental Support
		Perceived Support from Partner
Protective Factors	Total Cumulative Protection	Parental Support
	Cum. Protection – Ind. Domain	
	Cum. Protection – Family Domain	
	Cum. Protection Across Domains	
	Educational Aspirations	
	Self-Esteem	
	Academic Achievement	
	Parental Support	
	Parent Partner Status	
	Group Conventional Behavior	
	Gun or Weapon Carrying	
Promotive Factors	Total Cumulative Protection	Attachment to Child
	Cum. Protection – Ind. Domain	
	Cum. Protection – Family Domain	
	Cum. Protection – Env. Domain	
	Cum. Protection Across Domains	
	Self-Esteem	
	Academic Achievement	
	Parental Involvement in	
	Conventional Activities	
	Commitment to School	
	Attachment to Teacher	
Protective Factors	Total Cumulative Protection	(None)
	Cum. Protection – Env. Domain	
	Parental Involvement in	
	Conventional Activities	